

REMARKS

The Office Action dated August 12, 2003 has been received and carefully noted. The above amendments to the drawings and claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 2-7 and 9-11 are pending in the application. By this Amendment, Applicants have amended claims 2, 3, 9 and 11 to more particularly point out and distinctly claim the present invention. Claims 1 and 8 have been canceled without prejudice. In view of the following remarks, reconsideration and allowance of claims 2-7 and 9-11 are respectfully requested.

DRAWINGS

The Office Action indicated that the drawings filed on July 10, 2001 were acceptable for examining purposes only. The Office Action has now requested that Applicants now submit formal drawings. As requested, Applicant submits herewith replacement sheets, which includes Figures 1-4 and replaces the original sheet 1-4.

CLAIM REJECTIONS UNDER 35 U.S.C. §102

Claims 1-5, 8-9 and 11 were rejected under 35 U.S.C. §102(e) as being anticipated by *Kokko et al.* (U.S. Patent No. 5,790,534). The Office Action alleges that *Kokko* teaches all of the limitations of the claims. Applicants respectfully submit that the prior art cited in the Office Action fails to teach, suggest or disclose the features of the claims.

Claims 1 are 8 canceled without prejudice. Thus, the rejection regarding these claims is moot.

Claim 9, upon which claims 2-7 and 10-11 are dependent, recites a method for controlling transmission resources of a radio access network adapted to transmit data packets in real time traffic and in non-real time traffic. The method includes the step of obtaining information related to transmission resources required for handling real time traffic. The method also includes the step of reserving transmission resources for handling non-real time traffic based on a knowledge of overall available transmission resources of a radio transceiver device of the radio access network and the information related to the transmission resources required for handling real time traffic by the radio transceiver. The respectively allocated reserved transmission resources are distinguished on the basis of channel elements, and the channel elements are distinguished by pre-selected channel element identifiers.

As a result of the claimed invention, a system and method for managing physical resources of a radio access network is provided. One advantage provided by the invention is that the radio network controller (RNC) does not need to rely on bearer information, i.e., physical channel information like carrier frequency, code and/or time slot, for example, in the case of TD-WCDMA. This feature, in turn, leads to simplified procedures in the network and reduces the management overhead. Moreover, the time consuming and therefore rather slow channel activation or deactivation procedures of conventional devices can be removed, which improves the WCDMA data packet allocation functionality in terms of speed. Another advantage is that the method of the

invention does not increase the amount of data transmitted via the Iub interface. These advantages are not all inclusive but merely exemplars of some of the benefits of the invention.

Applicants submit that *Kokko* fails to disclose or suggest the elements of the invention as set forth in the claims, and thereby fails to provide the critical and nonobvious advantages that are provided by the invention. In order to anticipate a claim, it is well established that a reference must disclose every element of the claim. *Verdegaal Bros. V. Union Oil Co.*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d (Fed. Cir. 1989).

Kokko discloses a method wherein a base station in a CDMA radio system controls the data transmission from packet terminals to base station so that the radio resources are allocated for the system (*Kokko*, col. 2, lines 56-60). In column 6, line 18 – column 7, line 7 of *Kokko*, data terminals or MSs 12 needing cell resources to transmit packet data send a reservation or transmission request to the BS 16. The request includes an indication of the amount of resources needed to transmit the packet. A load monitor 14B calculates a total amount of required resources and compares the required amount to a maximum available amount of resources. If the required amount of resources does not exceed the maximum available amount of resources, the load control module 14C grants permission to transmit using a predetermined algorithm or rules base. The BS 16 sends to

each requesting terminal 12 a transmission permission, or a transmission prohibition, using the assigned CCH-fs.

According to Kokko, the limit value for the packet mode resources (R_{ps}) is determined in the load monitor 14B using the following relationship: $R_{ps}=R_{tot}-R_{cs}$, where R_{tot} is the total capacity of the cell and R_{cs} is the load of the circuit switched terminals. By transmitting an access message during a random access procedure in a transmit state, a MS 12 reserves cell resources that can be used for packet terminals.

In Kokko, a base station controller (BSC) 16 determines the load of the system over several cells, and determines a separate limit value for each base station 14. The various BSs 14 control the packet terminals 12 in their respective cells based on this limit value. Each load monitor 14B determines the total cell communications loading, and then transmits this value to the BSC 16. The BSC 16 in turn sends each BS 14 a value for R_{ps} . The value of R_{ps} can vary from cell to cell.

Kokko also discloses a first type of terminal having real-time transmission needs and a second type of terminal having non-real time transmission needs. *Kokko* determines at periodic intervals a total amount of capacity required to service the real-time terminals. *Kokko* then subtracts the determined amount from the current maximum capacity. *Kokko* allocates all or some of the remaining capacity to the non-real time terminals.

Applicants submit that *Kokko* fails to anticipate the claims of the invention because *Kokko* fails to disclose, teach or suggest several limitations of the claims. *Kokko*

does not anticipate the claims of the invention because *Kokko* does not disclose or suggest the steps of at least “the respectively allocated reserved transmission resources are distinguished on the basis of channel elements and said channel elements are distinguished by pre-selected channel element identifiers.”

According to one embodiment, the invention provides a method to control the physical resources of the RAN (transmission on Iub and BS). The physical resources of the RNC for data packet transmission via the Iub interface and via a respective base station are reserved dynamically according to the prevailing need of the transmission resources for the real time traffic components on a channel element basis. This means that the real time traffic is allocated all the radio resources that it needs and that the non-real time traffic is then allocated the remaining radio resources. This allocation and/or partitioning of available resources may be performed dynamically, i.e., after an initial partitioning. The RNC controlling device obtains a value for the expected real time traffic in the network for a subject base station. The resources for the non-real time are reserved based on the overall available transmission resources of a radio transceiver device such as a base station of the RAN and the information for handling the real time traffic by the base station. More precisely, the difference between the entire available transmission resources at a respective base station and the resources required for expected real-time volume at the respective base station may be defined as the reserved resources for the non-real time traffic at the respective base station.

The partitioned physical resources are allocated to the respective real time as well as non-real time traffic handled by a subject base station of the radio network. The allocation may be performed on a per channel element basis. For example, upon partitioning the physical resources, the real time traffic may be allocated a certain required number of the virtual paths and/or virtual channels, while the non-real time traffic is allocated the remaining resources, i.e. the remaining virtual channels and/or virtual paths.

After the resources have been initialized, the resources allocated for the NRT traffic may be refreshed on a packet basis. The Frame Control Layer over ATM transportation can be used for the refreshment procedure. In this procedure the RNC tells the base station just the identify of the traffic itself (e.g. TF, codes) and selects/addresses the channel element by selecting the dedicated ATM transmission. Thus according to the invention there is no need to refer to any bearer information. In practice this feature eliminates the need for channel activation procedure through BSAP or corresponding slow common control channel on the Iub interface of conventional devices. One disadvantage associated with such channel activation procedure is that they are time consuming which is bad for the WCDMA packet allocation functionality. Since the transmission should be transmitted as close to real time as possible having the maximum data rate possible anyway, the method of the present invention does not increase the Iub transmission.

Rather, *Kokko* discloses load control of radio resources instead of controlling transmission resources, for example, ATM, of radio access network on the network side as provided in the present invention. The present invention also controls the transmission resources by partitioning the physical resources of the network. Furthermore, as discussed above, in the present invention, the transmission may be dedicated on a channel element resource basis.

For at least the above reasons, Applicants submit that independent claim 9 is patentably distinguishable over *Kokko* and is in condition for allowance.

In addition, claims 2-7, and 10-11 depend from claim 1 and are therefore allowable for the reasons that claim 1 is allowable, and for the specific limitations recited therein.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 6 and 7 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Kokko et al.* (U.S. Patent No. 5,790,534) in view of *Ayyagari et al.* (U.S. Patent 6,278,701).

The Office Action alleged that *Kokko* discloses all of the elements of the claimed invention, with the exception of “wherein said update condition resides in that a predetermined time of a day is reached.” The Office Action relies upon *Ayyagari* to allegedly cure the deficiencies of *Kokko*. Applicants submit that the prior art cited in the Office Action fails to teach, suggest or disclose the limitations of the claims. Therefore, reconsideration is respectfully requested for the reasons which follow.

Ayyagari discloses a method and system that allegedly controls the allocation of power to users, quality of service requirements, and/or user activity levels to enhance capacity utilization. *Ayyagari* also discloses controlling the activity level of data users. In *Ayyagari*, the mobile switching center (MSC) collects requests for network access from data users. The MSC estimates the current voice load based on the measured voice traffic and expected traffic pattern for the time of data.

Applicants submit that the prior art fails to disclose or suggest the elements of the invention as set forth in claims 6 and 7, and thereby fails to provide the critical and nonobvious advantages that are provided by the invention. To establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all of the claimed limitations. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The teaching or suggestion to make the claimed combination must be found in the prior art, and not be based on Applicants' disclosure. See M.P.E.P. §§ 2143.01 and 2143.03.

The Office Action admits that *Kokko* fails to disclose, suggest or teach each and every element of claims 6 and 7. The Office Action relies upon *Ayyagari* to cure the deficiencies of *Kokko*. However, *Ayyagari* also does not teach or suggest the step of wherein the update condition resides in that a predetermined time of a day is reached. In the present invention, according to one embodiment, the information related to transmission required for handling real time traffic is obtained and reserved repeatedly

upon the occurrence of an update condition (see claims 9 and 3 of the invention). The update condition resides in that a predetermined time of day is reached.

Rather *Ayyagari* in column 14, lines 39-41 discloses that the MSC estimates the current voice load based on the measured voice traffic and expected traffic patterns for the time of day. However, *Ayyagari* does not perform an update based upon a predetermined time of the day.

Furthermore, since claims 6 and 7 depend from claim 9, claims 6 and 7 are also patentably distinguish over *Ayyagari* and *Kokko*, taken in combination or alone, for the reasons that claim 9 are patentable as discussed above. In particular, Applicants submit that *Ayyagari* and *Kokko*, taken in combination or alone, does not render claims 6 and 7 obvious because the references also fail to disclose or suggest “the respectively allocated reserved transmission resources are distinguished on the basis of channel elements and said channel elements are distinguished by pre-selected channel element identifiers.”

Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Kokko et al.* (U.S. Patent No. 5,790,534) in view of *Widegren et al.* (U.S. Patent 6,374,112).

The Office Action alleges that *Kokko* discloses all of the elements of claim 10 with the exception of “wherein said channel element identifiers are virtual path identifiers VPI and virtual channel identifiers VCI.” The Office Action relies upon *Widegren* to allegedly cure the deficiencies of *Kokko*. Applicants submit that the prior art cited in the Office Action fails to teach, suggest or disclose the limitations of the claims. Therefore, reconsideration is respectfully requested for the reasons which follow.

Widegren discloses a flexible radio access and resource allocation in a universal mobile telephone system. In *Widegren*, the resources are allocated based upon the radio access bearer parameters. Figure 6 shows a radio resource allocation routine (block 200) for flexible mapping of bearer services onto different channel types. The RNC detects a radio access bearer service request from a service node (block 202), and determines the type of radio access bearer service and the quality of service parameter(s) requested for that bearer service (block 204). The RNC determines one or more traffic conditions at the cell or cells where the mobile station to be involved in the connection is currently located (block 206). Based on the quality of service parameter(s) and traffic condition(s) determined, the radio resource controller 36 selects the type of channel to carry information associated with the radio access bearer service request (block 208).

Applicants respectfully submit that *Kokko* and *Widegren*, taken in combination or alone, does not render obvious claim 10 for several reasons. First, *Widegren* teaches away from the present invention. As discussed above, one aspect of the invention is that the radio network controller (RNC) does not need to rely on bearer information when allocating the physical resources. *Widegren* is in direct contrast with the present invention because the allocation of the resources in *Widegren* is based upon the bearer parameters (*Widegren*, Fig. 6, cols. 9-16). Thus, one of ordinary skill in the art would not have been motivated to combine the teachings of *Kokko* and *Widegren* to render the claims of the invention obvious.


Second, there is no explicit or implicit disclosure within *Widegren* of “channel elements identifiers which are virtual path identifiers VPI and virtual channel identifiers VCI” as asserted in the Office Action. Although the Office Action alleges, “ATM inherently has VPI/VCI information in the header to identify the mobile from other mobile stations and to identify the path taken to the mobile station”, the term “virtual channel” is not even mentioned in *Widegren*. Furthermore, the Office Action has not provided proper support that such features are inherent in an ATM. Applicants therefore respectfully submit that the Office has not provided sufficient support for a case of inherency based upon the teachings of *Widegren*. Thus, Applicants respectfully request the withdrawal of this rejection since the teachings of *Kokko* and *Widegren*, taken in combination or alone, fails to disclose or suggest each and every element of claim 10.

Thus, Applicants submit that certain clear and important distinctions exist between the cited prior art and the claimed invention. Applicant submits that these distinctions are more than sufficient to render the claims of the invention unanticipated by and unobvious in view of the prior art. It is therefore requested that claims 2-7 and 9-11 be found allowable, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants’ undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Dinnatia J. Doster", is written over a horizontal line.

Dinnatia J. Doster
Registration No. 45,268

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802

DJD:cct